





An Overview of Recent Developments in UK Warship Acquisition

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Introduction

UKMOD has undergone a significant change in approach to warship acquisition, following tough historic lessons, changing strategic and industrial circumstances and a realisation of future difficulties.

Aim: To highlight the significant changes ongoing in UK warship acquisition

Dr Chris Dicks

BEng(Hons) PhD CEng MIMechE MRINA RCNC

- Joined MOD training Scheme @ 18
 - RNEC Manadon
 - BEng Mechanical Engineering
 - PhD in Naval Architecture
 - Concept Warship Design
- 2 Years, Surface Ship Stability Certification,
- 6 Years, NA, Major Warships IPT
 - 2 years as Head of NA
- 2 ³/₄ years, UKEO, NSWCCD
- Return Home: July 09 to.....?



Health Warning

- Informal presentation intended to introduce developments, not a definitive guide.
- All specific data from open UK sources but contact author before quoting.
- All views those of the author, not of the relevant project, USN or the MOD.

Format

- Setting the Scene
 - Ministry of Defence
 - Background to DIS
 - Defence Industrial Strategy
- The Impact on Warship Acquisition
 - Acquisition Initiatives
 - Equipment Programmes

Ministry of Defence: Overview

A single Department of State for all defence matters, including all three armed forces

- **2007/8 “RDEL +CDEL” \$47Bn**
 - 5.4% of UK Government expenditure
 - About 40% of UK National Health Service expenditure
- **Manpower Targets 2008**
 - Royal Navy: 36,260
 - British Army: 101,855
 - Royal Air Force: 40,790
 - Civilian: 83,098

Where in the World? RN



June 2008, week 1



Ex. Taurus 09

(COMATG Deployment UK--Far East)



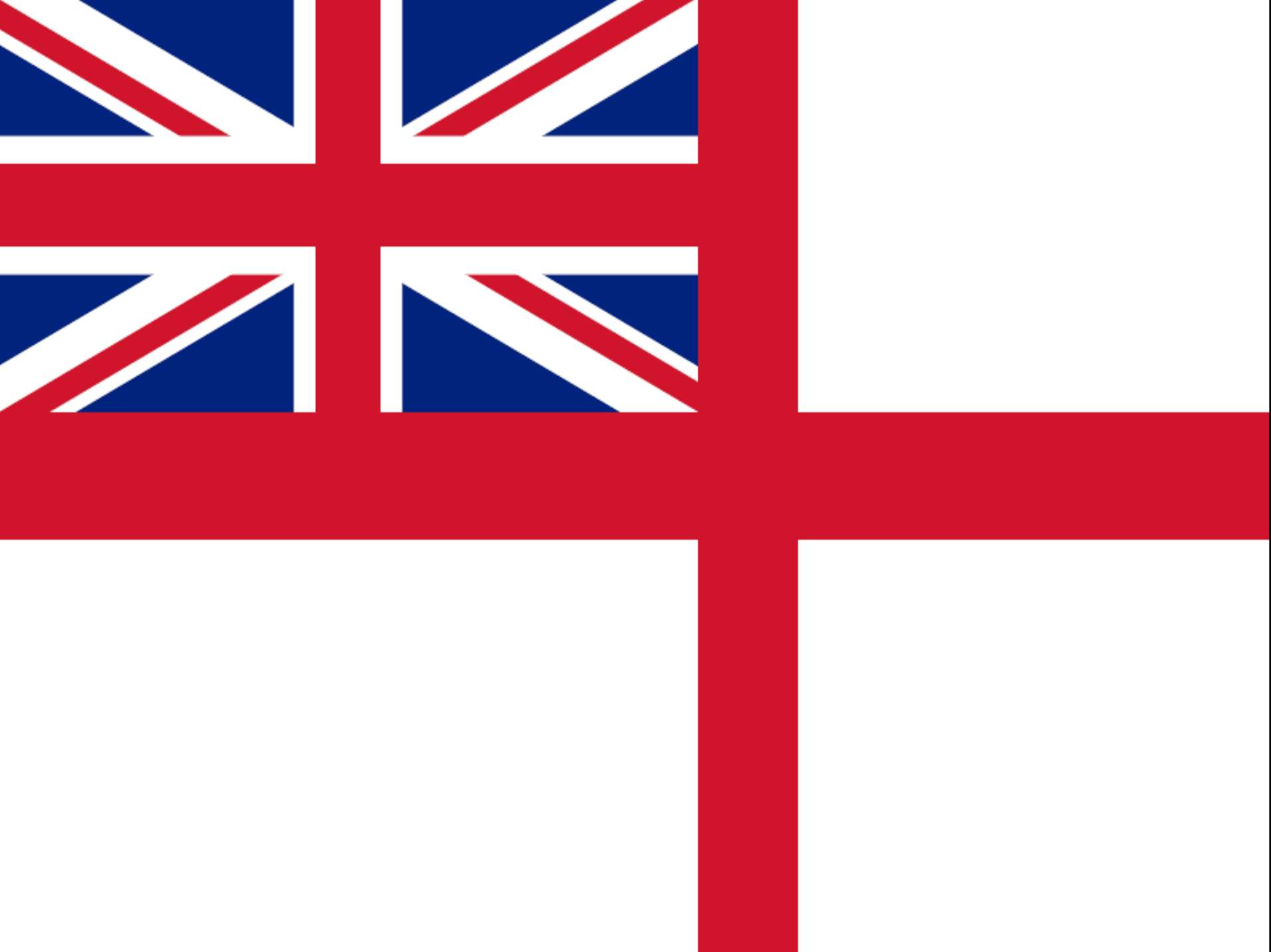
Where in the World? British Army

- **Operation TELIC (Iraq) : 4100 Personnel**
 - 20th Armoured Brigade
 - 179 Fatalities
 - Most troops withdrawn by Summer 09.
- **Operation HERRICK (Afghanistan) : 8000 Personnel**
 - 3 Cdo Brigade RM tbrb 19 Light Brigade
 - 152 Fatalities
- **16 Brigades**
- **30 “Operations” in progress**
- **Overseas Deployments (over 80 Countries)**



Where in the World? Royal Air Force







































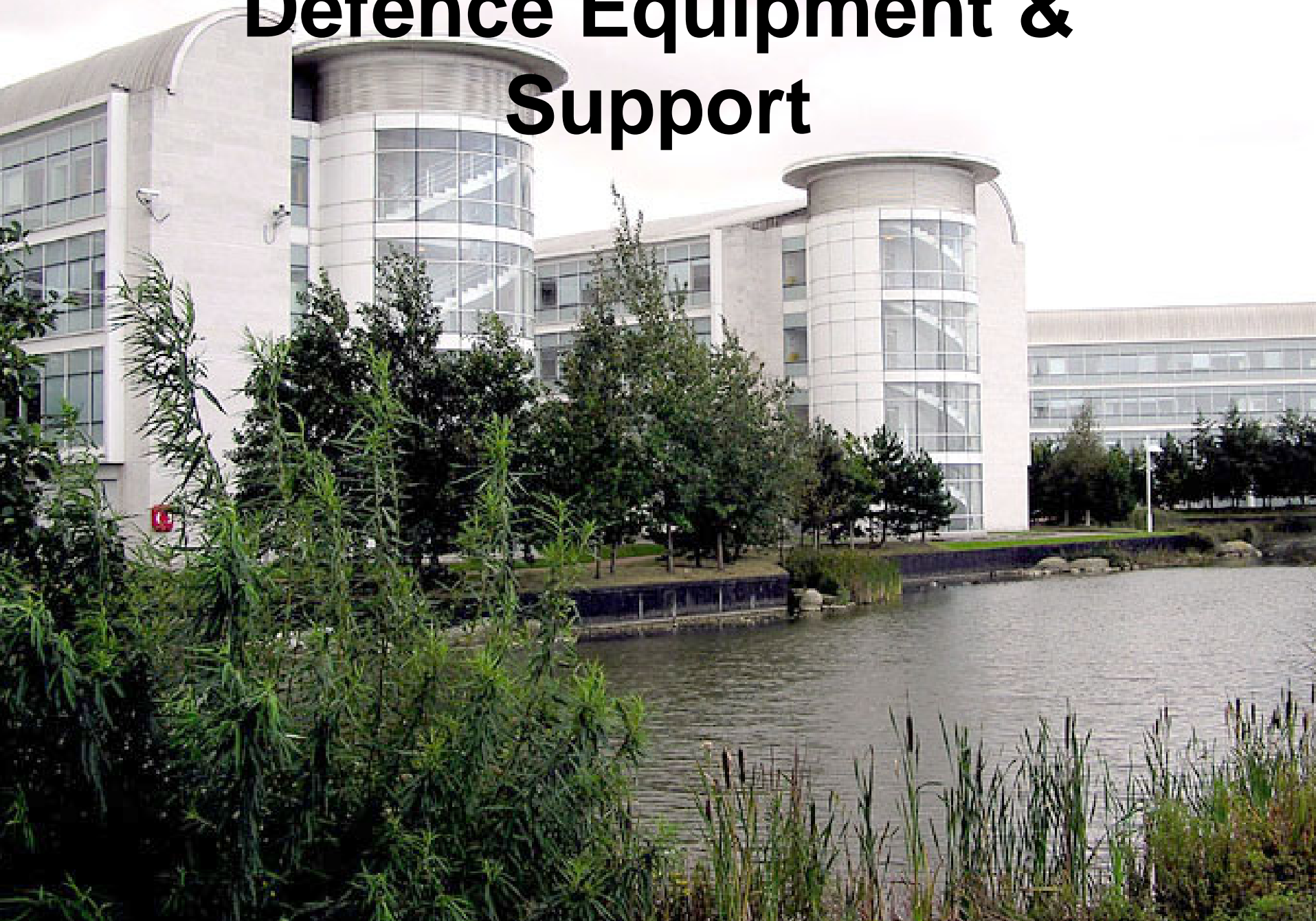








Defence Equipment & Support



Defence Equipment & Support

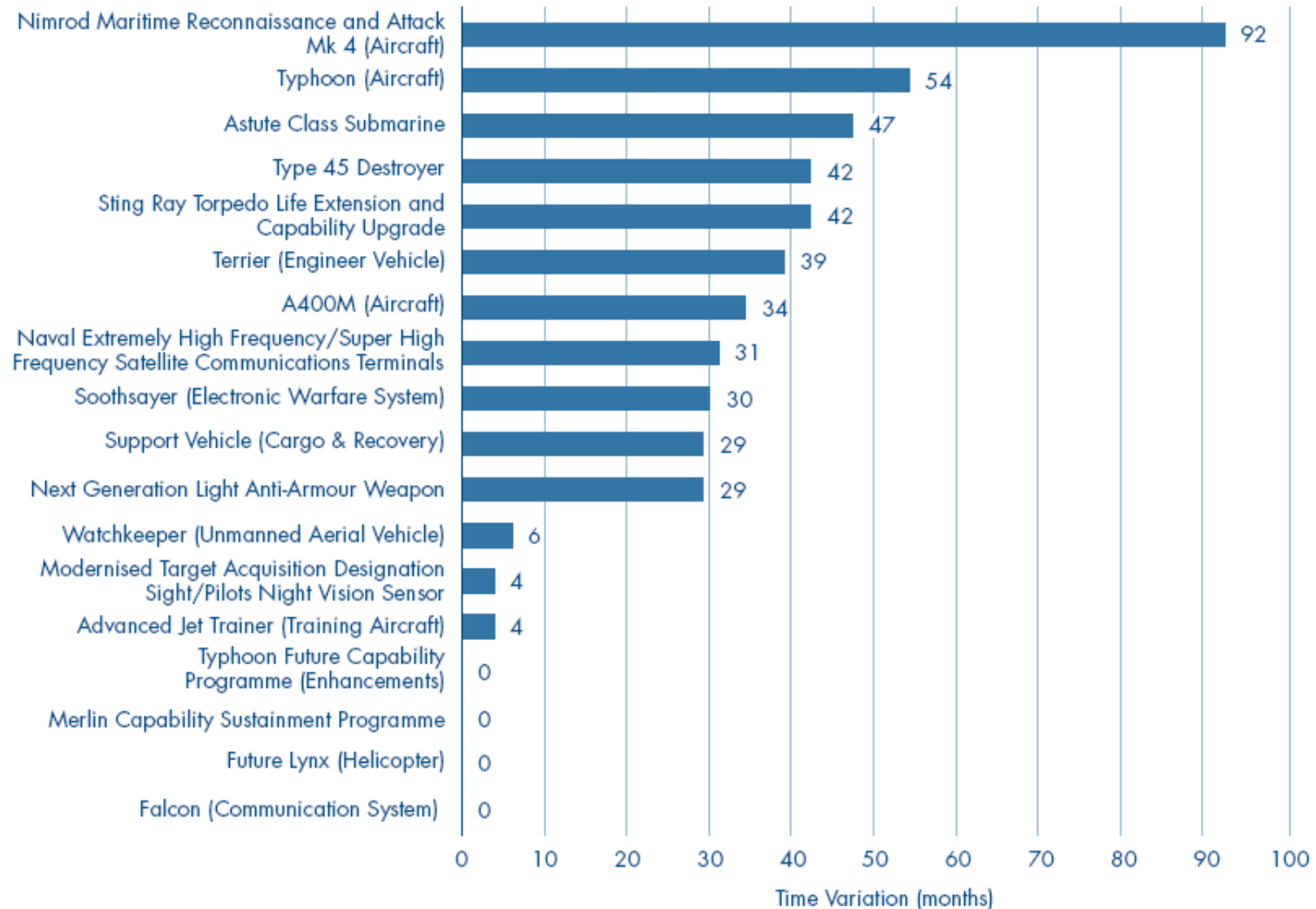
- DE&S equips and supports all the UK's armed forces for current and future operations
- Chief of Defence Materiel: General Sir Kevin O'Donoghue
 - Annual budget: \$23 billion
 - Workforce:
 - 24,000 (reducing to 20,000 under "PACE")
 - 77% civilian, 23% military
 - 3,800 posts relocating to Bristol Area



Major Project Report 2008

Time Variation Since Main Gate

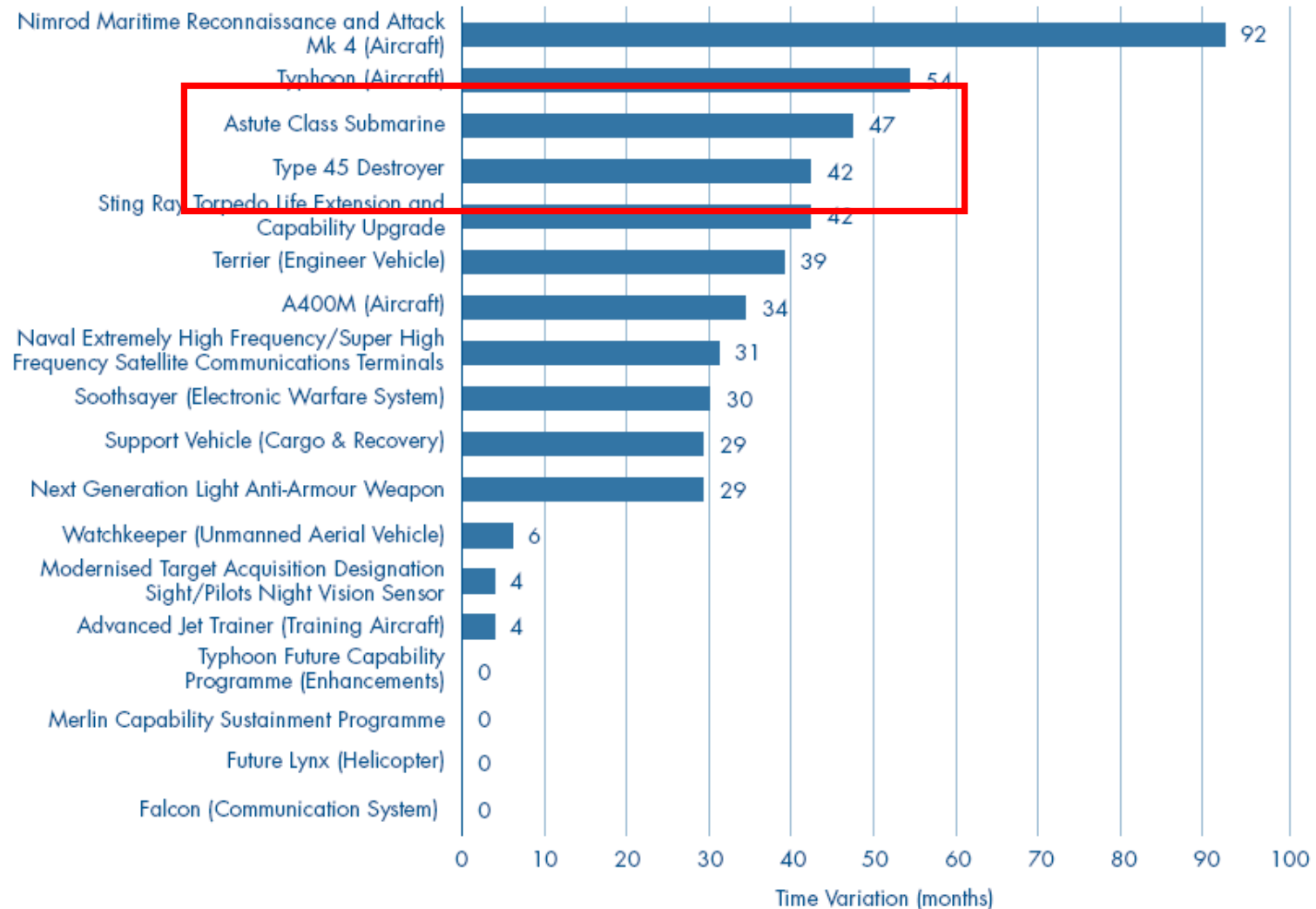
Time Variations since Main Gate Approval (months)



Major Project Report 2008

Time Variation Since Main Gate

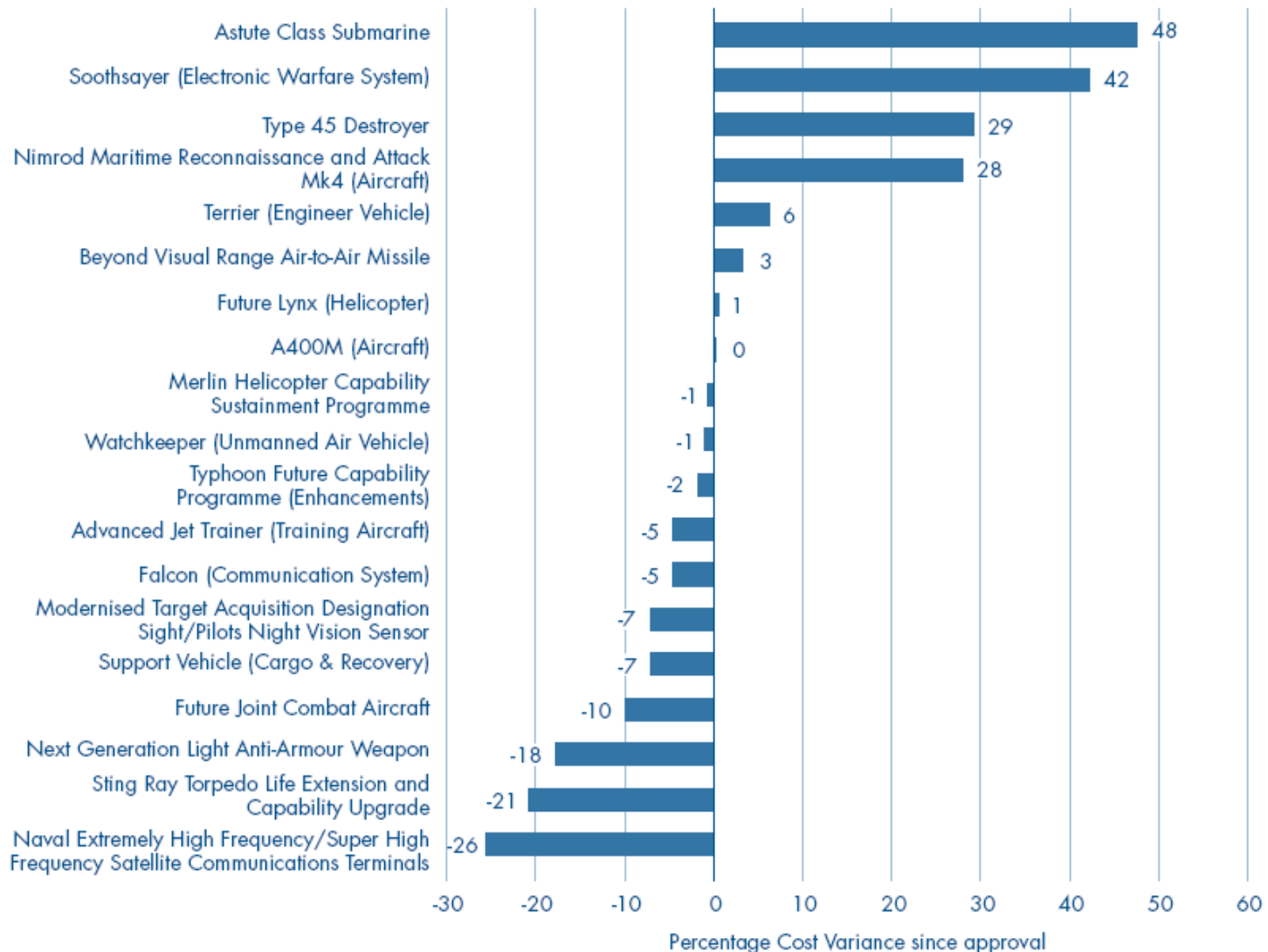
Time Variations since Main Gate Approval (months)



Major Project Report 2008

% Cost Variation Since Main Gate

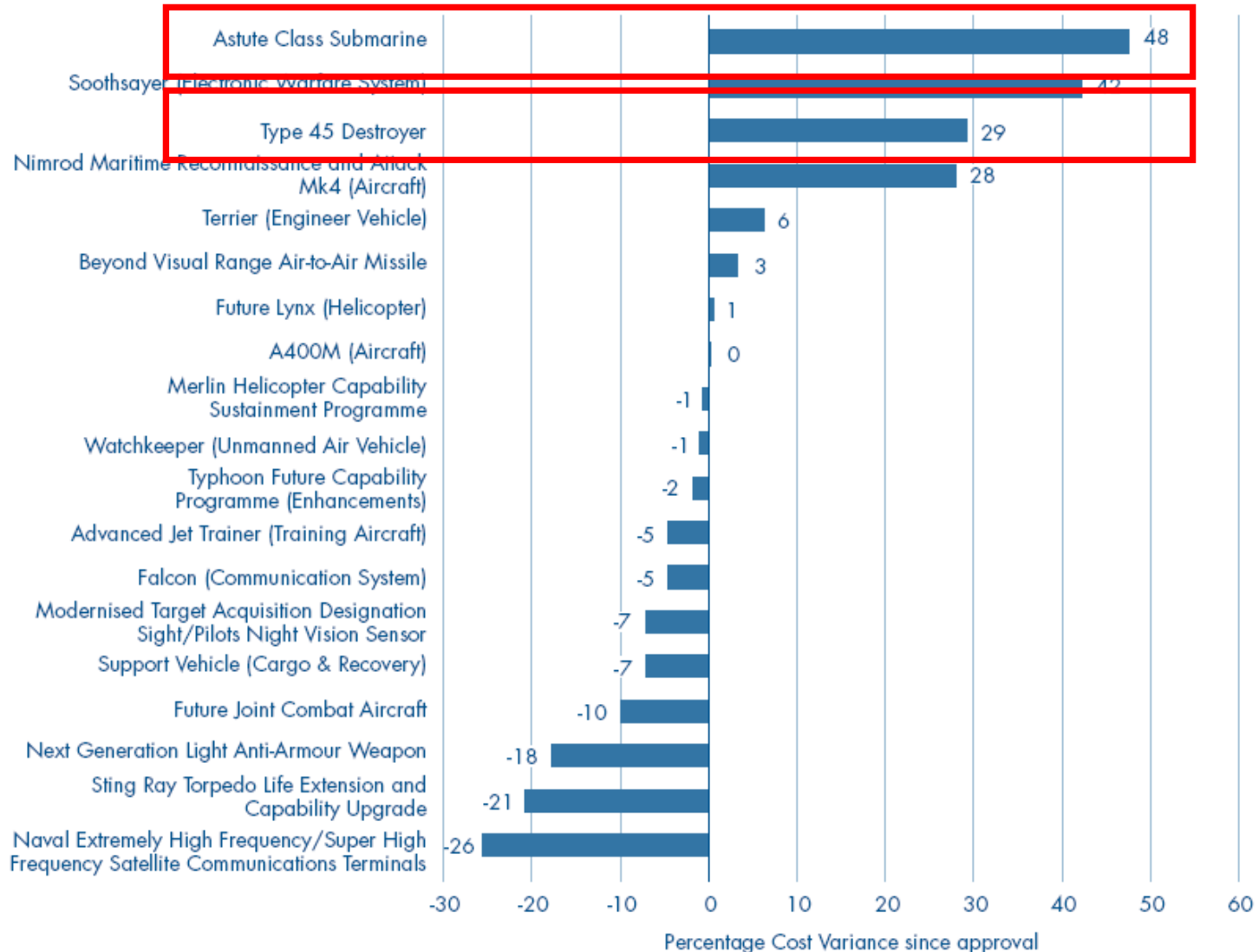
Cost Variation since Main Gate Approval



Major Project Report 2008

% Cost Variation Since Main Gate

Cost Variation since Main Gate Approval



Major Projects Report 2008

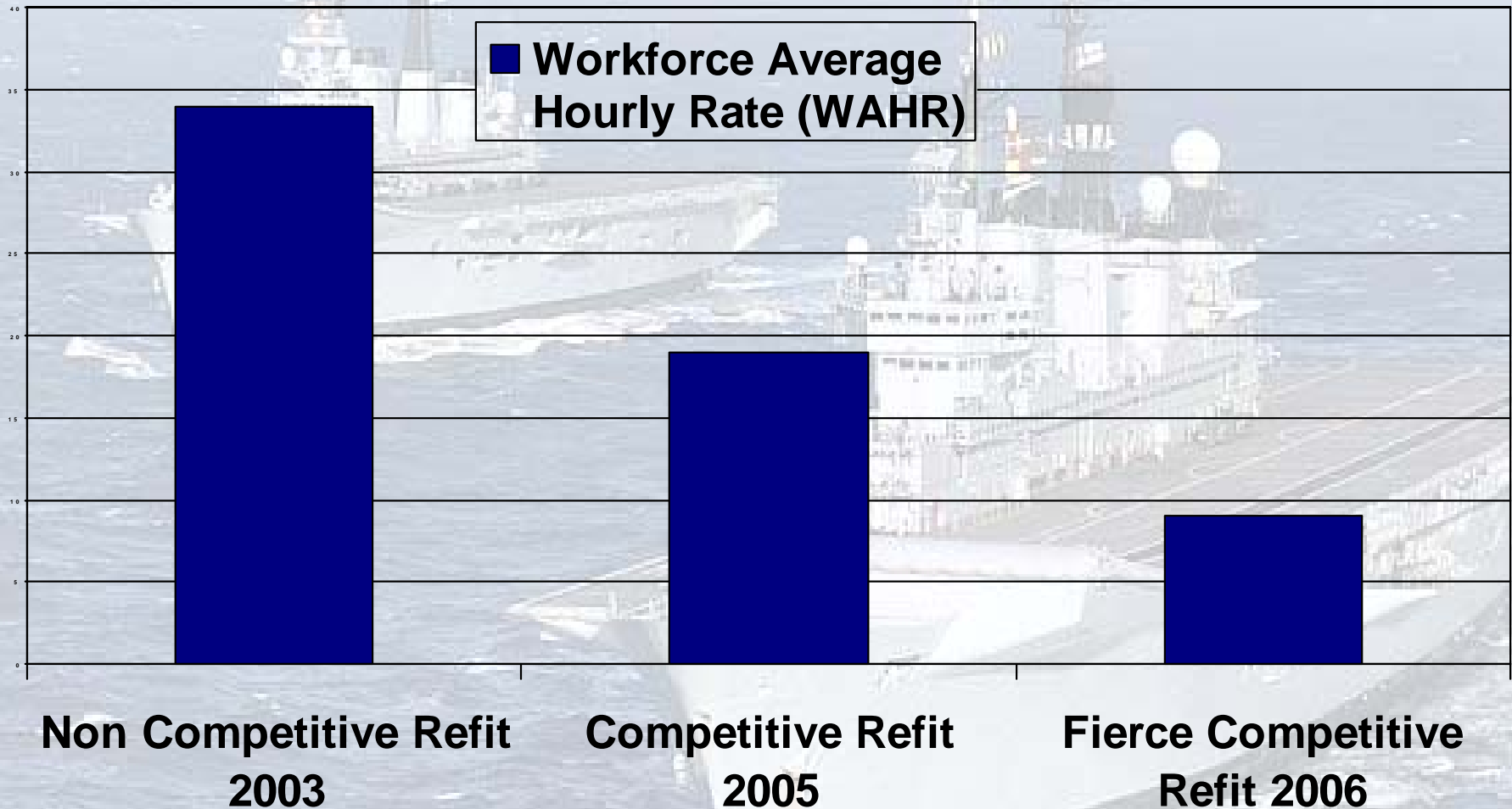
Average Project Performance Over 20 Major Projects

- Avg In-Year Cost Slippage \$20M
- Avg In-Year Slippage 5 mths
- % Projects meeting 100% of Key User Requirements 75%

Significant Issues in Defence Acquisition

- Tensions between
 - Cost Effectiveness
 - Indigenous Capability
 - Acquisition Cycle Speed & Cost
 - Programme Stability & Finances
 - Present vs Future
- In Particular
 - Short Term Competition vs. Long Term National Capability
 - 73% of contracts in 2005 were competitive

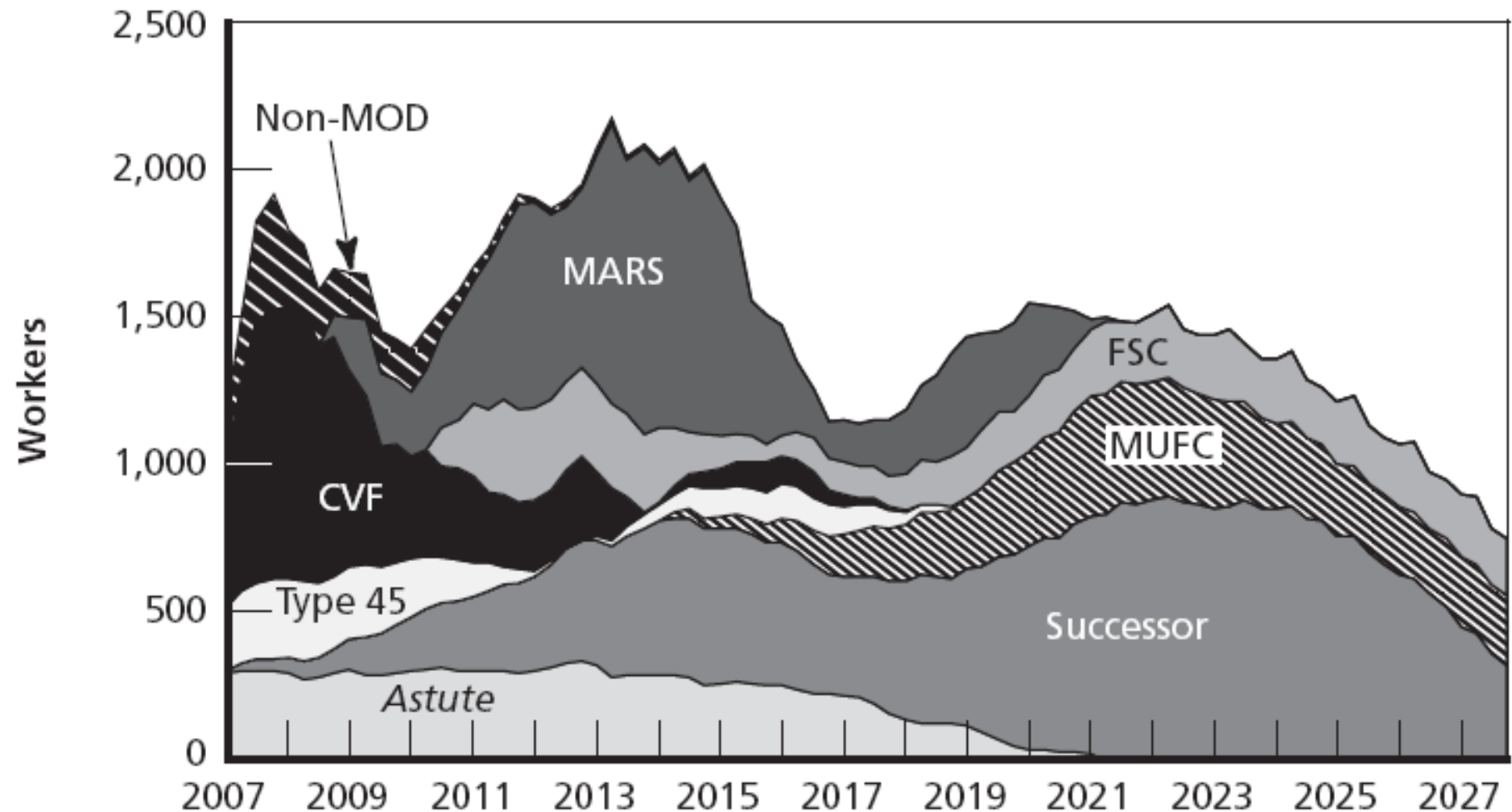
Refit Manpower Cost Example



Indigenous Industrial Capability

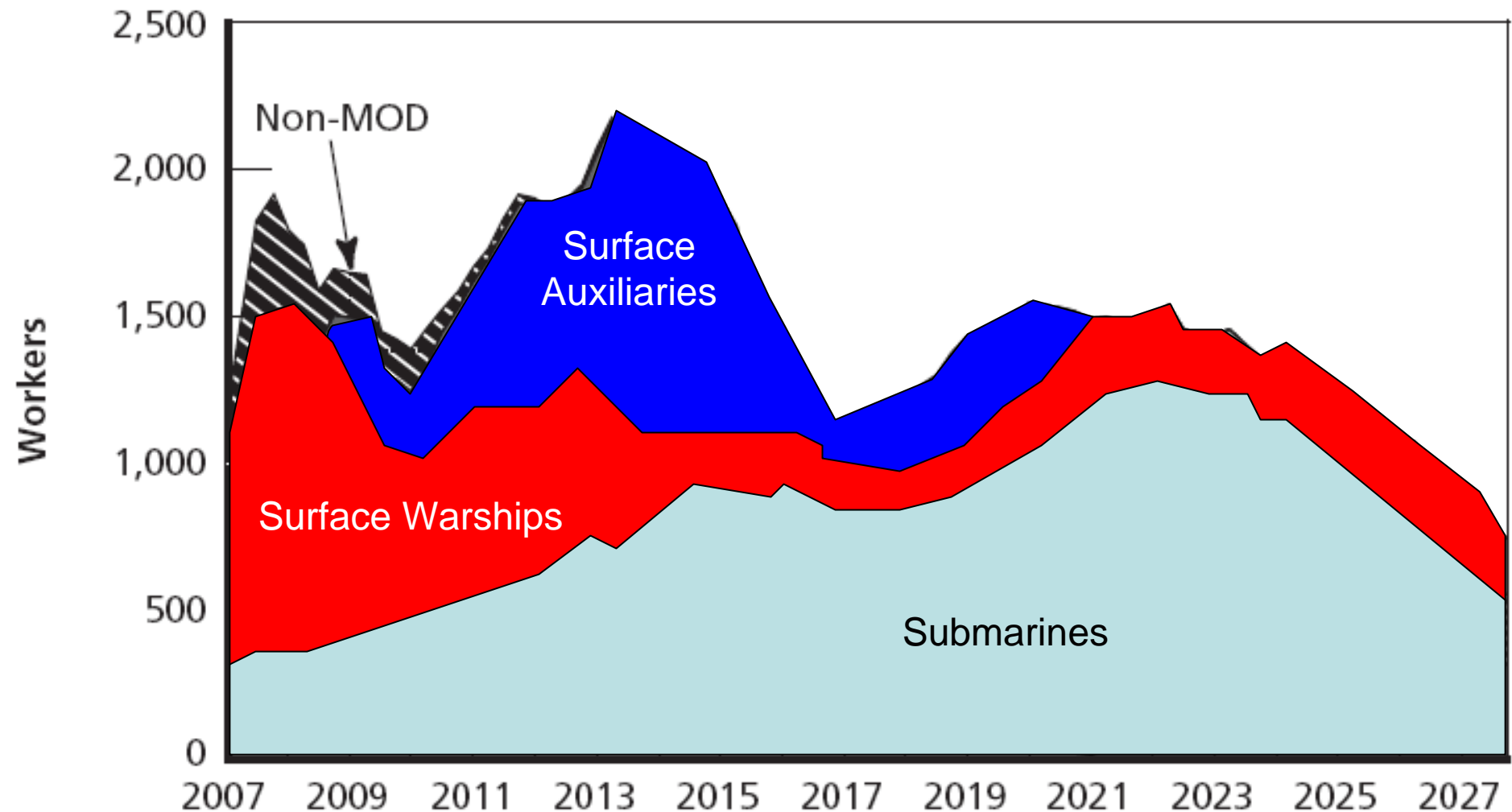
- Number of UK based organisations able to supply equipment to UKMOD
 - Helicopters 1 (Anglo-Italian)
 - Submarines 1
 - AFV 1 (owns 95% of British suppliers)
- Is this sustainable in a competition based culture?

RAND's Prediction of UK Warship Professional Engineer Demand



Source: RAND "Sustaining Key Skills in the UK Naval Industry", 2008

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Source: RAND "Sustaining Key Skills in the UK Naval Industry", 2008

Defence Industrial Strategy 2005

*“We need to be assured that we can procure from a **sustainable industrial base**, that retains within the UK those industrial **capabilities**that are **required**... to ensure our **appropriate sovereignty**”.*

*“We also recognise that the bedrock of our procurement policy has to be **long term value for money**. Competition is often a useful mechanism ... but is not always appropriate....”*

DIS White Paper,

(Signed by 3 Cabinet Ministers & 2 Ministers of State)



Defence Industrial Strategy 2005

- Strategic overview of defence
- Identified minimum national industrial capability / capacity
- Identify the need for industry restructuring
- Set out how MOD and industry needed to change
- Followed by:-
 - Defence Acquisition Change Programme
 - Defence Technology Strategy



DIS: Strategic Maritime Capabilities to be Retained in UK

- Design, Build, Support complex ships and submarines
 - **No** absolute requirement to build **all** warships and Royal Fleet Auxiliary vessels in the UK.
- All capabilities unique to submarines.
- The ability to develop and integrate complex maritime combat systems.

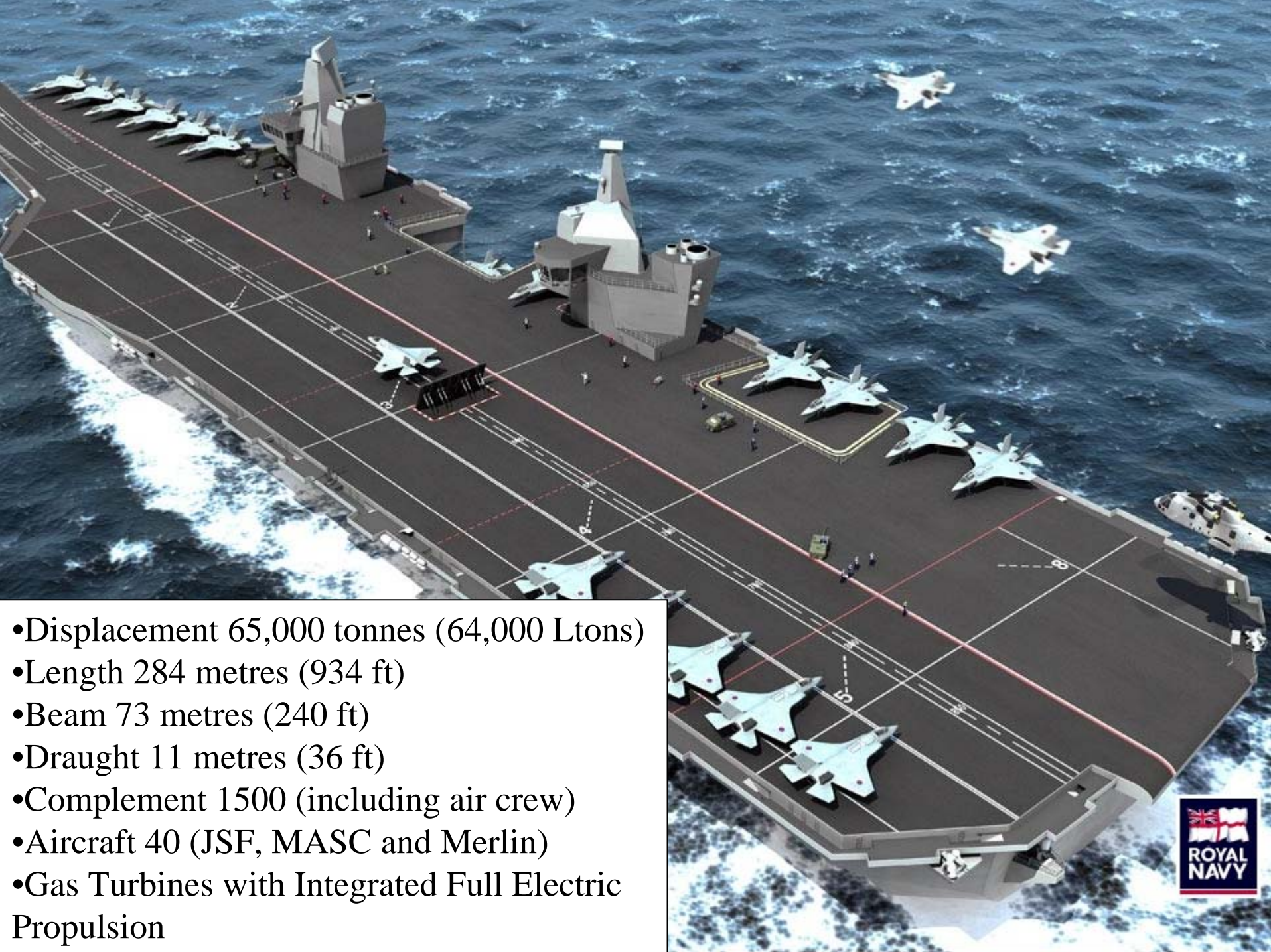


DIS Inspired Surface Ship Initiatives

DIS element	Surface Ship Programme	Surface Ship Initiative
Design Complex Warships	FSC	Naval Design Partnership
Build Complex Warships	CVF, FSC	Shipbuilding Joint Venture
Build Less Complex Shipping	MARS-FT	Overseas Build
Support Complex warships	In Service Combatants	Transforming Surface Ship Support Project

CVF





- Displacement 65,000 tonnes (64,000 Ltons)
- Length 284 metres (934 ft)
- Beam 73 metres (240 ft)
- Draught 11 metres (36 ft)
- Complement 1500 (including air crew)
- Aircraft 40 (JSF, MASC and Merlin)
- Gas Turbines with Integrated Full Electric Propulsion

CVF Status

- Aircraft Carrier Alliance
 - Industry & MOD Partnership responsible for project delivery
 - Separate MOD project team responsible for Oversight
- Order placed for 2 vessels
 - HMS Queen Elizabeth ISD 2014
 - HMS Prince of Wales ISD 2016
- Dockyard infrastructure contracts placed
- Long lead engineering items ordered
- French Navy:
 - PA-2 decision postponed to 2011
 - Based on CVF?

CVF Build Strategy

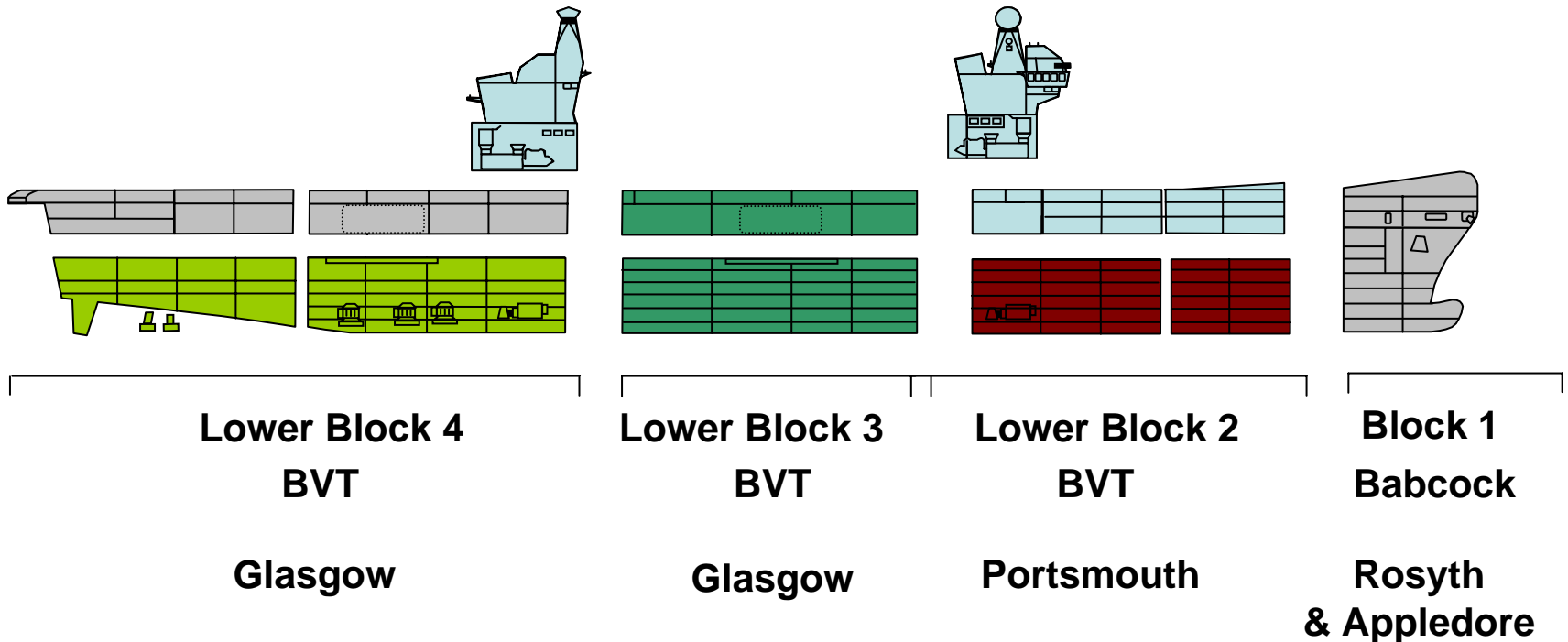
- Two ship build contract “...in the region of...” \$5 Bn
- Assembly at Babcock Marine (Rosyth)
- Uses all significant surface ship construction capacity in UK.
- Significant sub contracts : 50% of Procurement Contracts to be competed

CVF Build Strategy

Sponsons: Babcock

Superstructure: BVT Portsmouth

Upper Blocks: A&P Tyneside & Cammell Lairds, Merseyside



CVF Build Locations

◆ Construction

☀ Assembly



BVT Surface Fleet

- BVT Surface Fleet is a naval shipbuilding and support company.
 - BAE and VT own 55% and 45% of the company
 - VT Selling Stake?
- Terms of Business Arrangement:
 - “vast majority” of MOD naval vessel orders will be placed with BVT Surface Fleet for 15 years.
 - “Drumbeat” assumptions to allow capacity, investment and workforce planning.
 - T45, CVF, FSC & MARS “Complex Auxiliaries” will be the core of this work.
 - Total net savings target:
 - >£700 million shared 70/30 between the MoD and BVT SF.
- Status: established and consolidating business functions

Future Surface Combatant

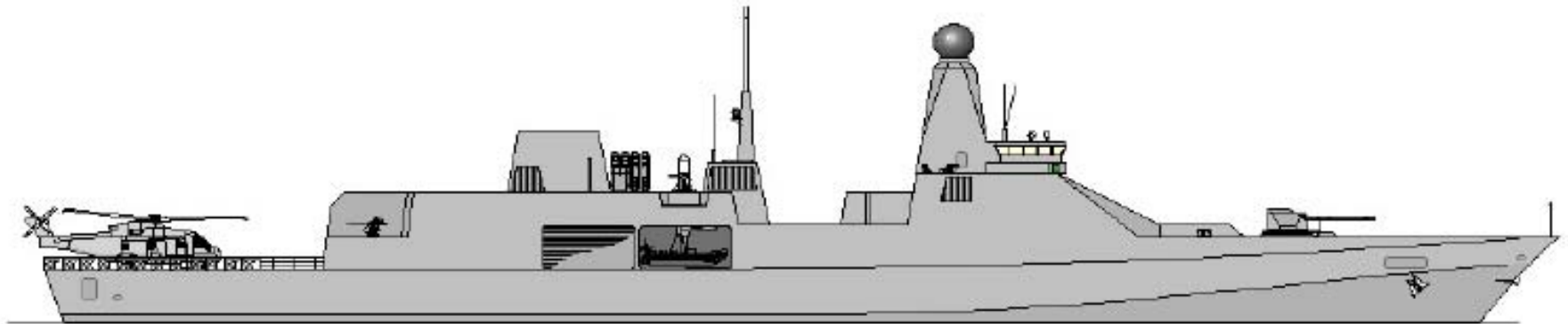


FSC Programme Assumptions

- Replace 17 T22/T23 Frigates with C1/C2 Frigates
 - C1 – Task Group enabled/ Force ASW
 - C2 – Stabilisation / General Purpose
 - Order 1 per year; ISD circa. 2019
- Concept Design by Naval Design Partnership
- Detailed Design & Build by BVT Surface Fleet
- Supported by Surface Ship Support Alliance
- Use MOTS equipment wherever possible.
- C3 : Possible OPV/MCM/SVOH Replacement
 - PFI?

C1 Indicative Design

- Full Load Displacement circa 7,500 tonnes
- Length 145+ m, Beam 19 m, Draught 5.5 m
- 150 crew, 30 EMF
- 155mm gun, 48 VLS cells, Local area air defence, SSGW, MRR
- Merlin Helicopter or 2 Future Lynx & UAVs
- ASW Sensor suite – LFAS & MF Sonar, UUVs
- Open architecture Command system



C2 Indicative Design

- Full Load Displacement circa 7,500 tonnes
- Length 145+ m, Beam 19 m, Draught 5.5 m
- 130 crew, 30 EMF
- 155mm gun, 48xVLS cells, Local area air defence, SSGW, MRR
- 2 Future Lynx & FASGW
- Multi role mission bay for MCM, H&O, SF Ops, USV, UUVs
- Open architecture Command system



MINISTRY OF DEFENCE



Naval Design Partnership

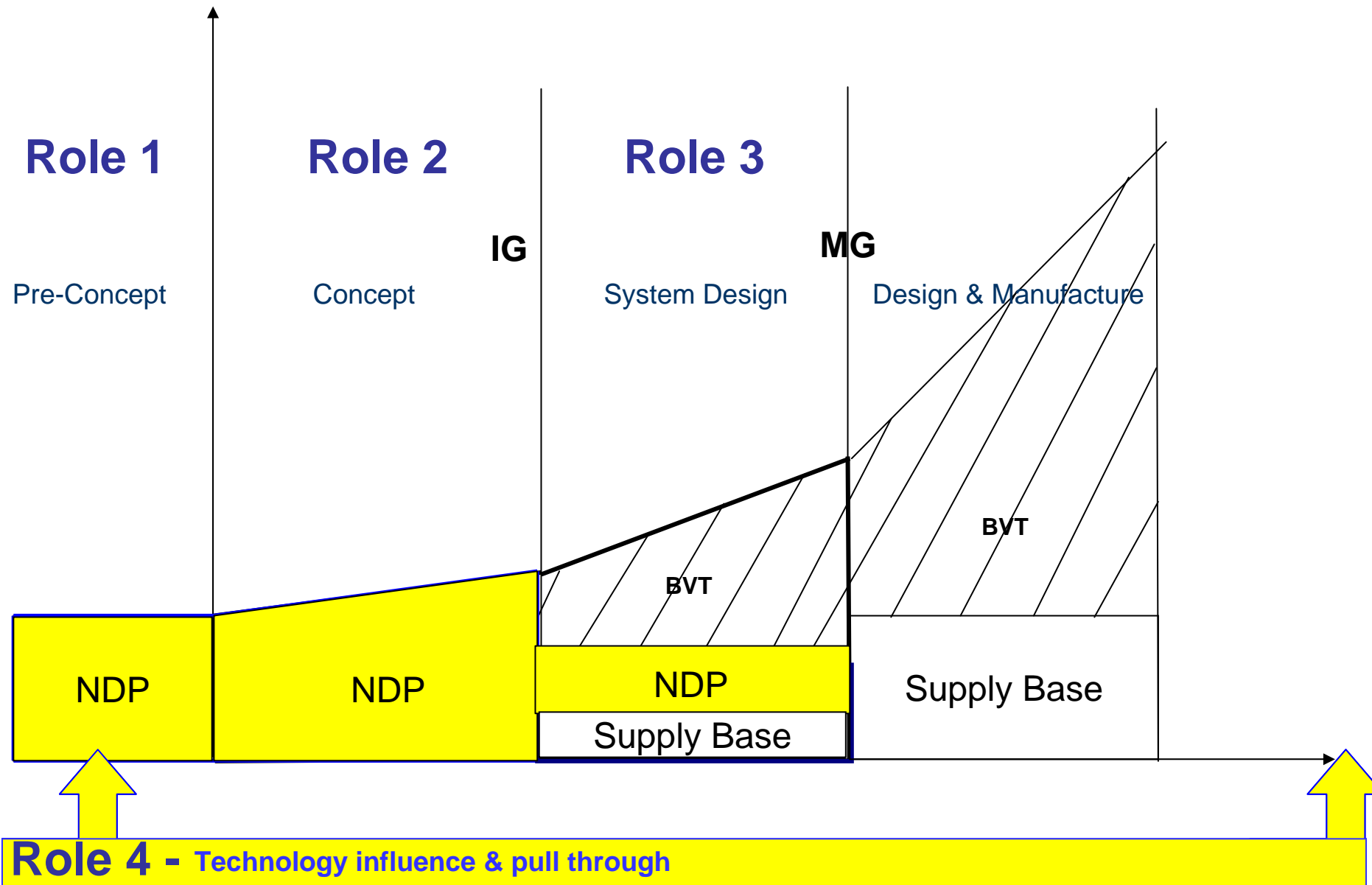
- Current / Future MOD demand challenges the sustainability of naval design capability

“The NDP has been established to engage the full wealth of UK talent ... to help sustain the capability to design complex warships in the UK.”

NDP Overview

- Multi Industry team led by MOD
- Engaged from Pre-Concept through to Manufacture Contract
- Team recruited from MOD / Industry on 'best person for job' basis:
 - Eg NDP Team Leader currently required, Navy Captain equiv post, open to MOD & NDP Partners
- One year pilot project focused on FSC in 2008
- Planned as sole vehicle for MOD-executed naval design from FSC onwards

The Role of the NDP



Core Membership



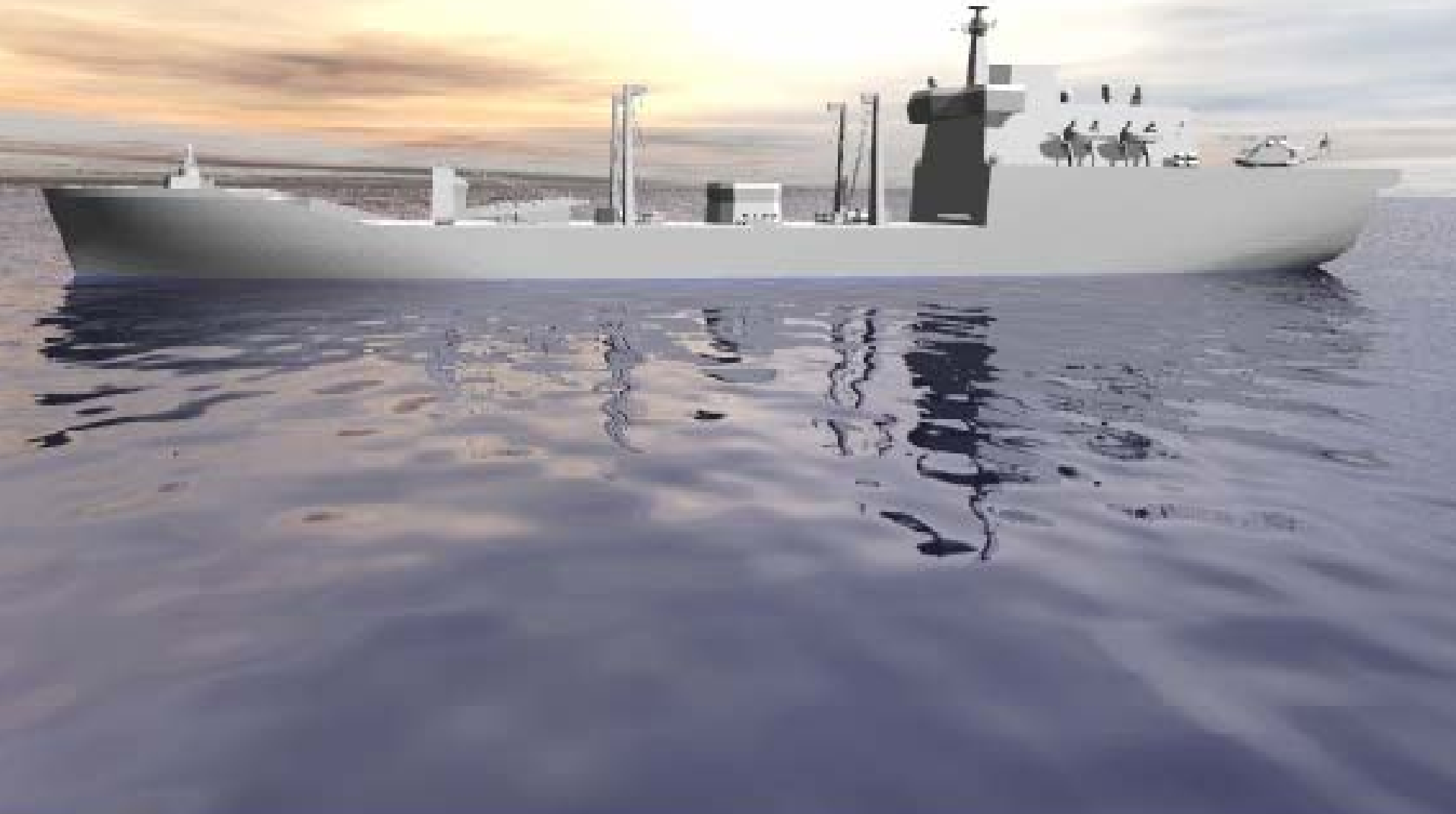
QinetiQ



THALES



Maritime Afloat Replenishment System (Fleet Tanker)



Fleet Tanker INDICATIVE Design

THIS GENERAL ARRANGEMENT (G.A.) IS PROVIDED FOR INFORMATION ONLY

THIS G.A. HAS BEEN PRODUCED BY THE AUTHORITY, IN CONSULTATION AND AGREEMENT WITH MOD STAKEHOLDERS, TO ASSIST IN THE UNDERSTANDING OF THE DESIGN ISSUES AS THEY RELATE TO THE G.A., ASSOCIATED WITH A POTENTIAL FLEET TANKER SOLUTION AND AS PART OF THE TECHNICAL SPECIFICATION VALIDATION PROCESS.

THE OVERALL SHIP DESIGN HAS NOT BEEN BALANCED WITH RESPECT TO STRUCTURAL STRENGTH, STABILITY, POWERING REQUIREMENTS ETC. SYSTEM REQUIREMENTS HAVE ONLY BEEN CONSIDERED AT THE MOST FUNDAMENTAL LEVEL.

CLASSIFICATION			
SHT	TITLE	ISSUE	DATE
1-5	AD D&C INTERNAL REVIEW	0a	19.3.08
1-5	FLEET REVIEW	0b	26.3.08
6	SHT ADDED: SEP. O/B PROFILE	0c	14.4.08
1-6	DES Ships A/Sup DC-NA review	1	23.4.08

MAIN PARTICULARS

LENGTH OVERALL 205.90m
LENGTH AT WATERLINE 193.54m
BEAM: 28.49m
DEEP DRAUGHT: 9.72m
DEEP DISPLACEMENT (APPROX) 34,000te
LIGHTSHIP (APPROX): 14,000te
MAIN HULL DEPTH: 13.10m
CARGO TANK DOUBLE BOTTOM Ht: 2.00m
TWEEN DECK HEIGHT: 2.80m
SPEED (OPERATIONAL) 15kts
SPEED (CONTRACT) 17kts
RANGE 7000nm

CREW
CORE RFA COMPLEMENT 60 + 4 CDT
EMBARKED MILITARY FORCE 32

CARGO F.O.: 19,182m³ (F76/MGO/F44 or F34)
CARGO F.W.: 1,300m³
RAS(L) 2 x 7" RIGS STBD ALIGNED FOR CVF
1 x 7" RIG PORT

PORT SIDE CRANE RIG
ASTERN "HUDSON" REEL
BOW RECEPTION
CONTAINER PARK 8 x 20TEU

SURVIVABILITY:

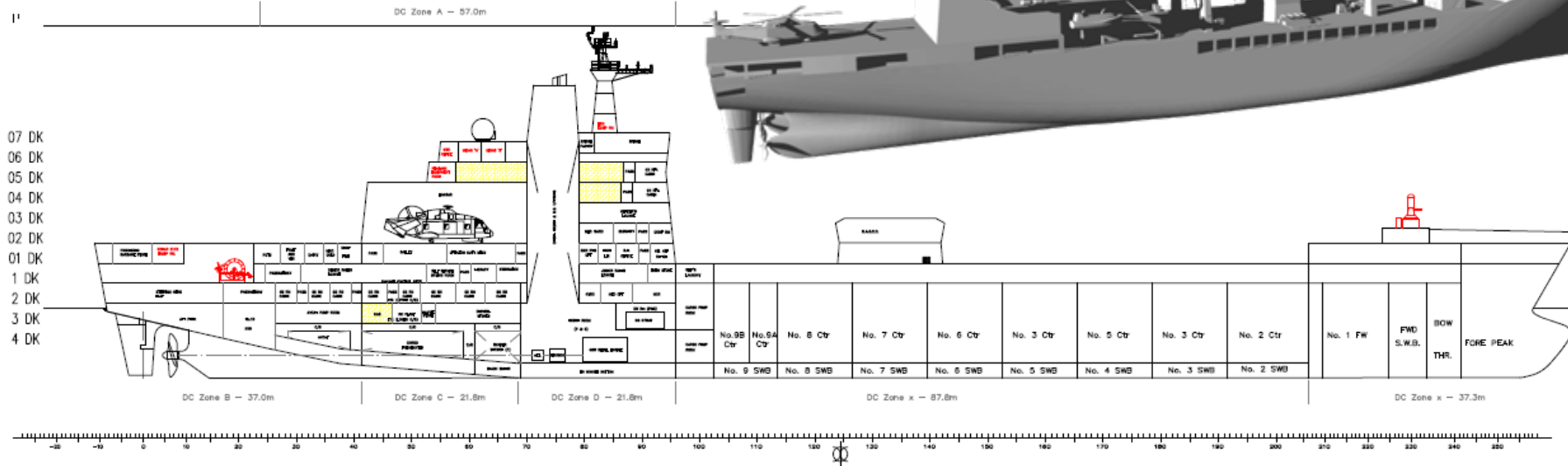
FTR: 8 x GPMG, 2 x M323 MINIGUN, 2 x 30mm ASCG
IPMD: PHALANX CIWS

CONSTRUCTION:

LLOYDS NAVAL SHIP RULES, NAVAL SHIP CODE
NAVAL STABILITY, FIRE & MUNITIONS STANDARDS

PROPULSION:

DIESEL MECHANICAL (SHOWN) OR DIESEL ELECTRIC
DEPENDENT ON THROUGH LIFE COST ASSESSMENT



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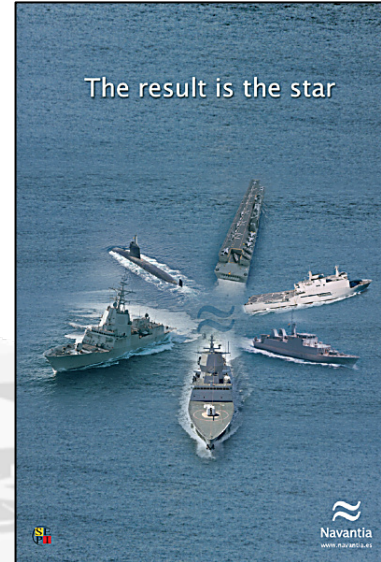
2009 Fleet Tanker Bidders



Fincantieri
(with NSL)



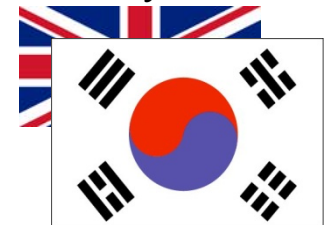
Hyundai



Navantia &
Babcock



Daewoo, BMT DSL &
BAE Systems



MARS FT status

- A package of measures to rebalance the Defence equipment programme towards the support of current operations was announced by Rt Hon John Hutton MP, Secretary of State for Defence, 11th December 2008:

"We have also reviewed all the components of the MARS fleet auxiliary programme, and have concluded that there is scope for considering alternative approaches to its procurement which is likely to involve the deferral of the fleet tanker element."

Future Path Under Review

Surface Ship Refitting Issues

- 3 Surface Ship Refitting Yards
- Inability to maintain both competition and minimum capacities.
 - Variation in “load” due to competition.
 - Unsustainably low prices to win competition.
 - Risk of withdrawal from refit sector.
 - Smaller future MOD refit programme:-
 - No CVS refits, Smaller, less frequent DD/FF refits, less ships in total
- Solution: “Transforming Surface Ship Support”

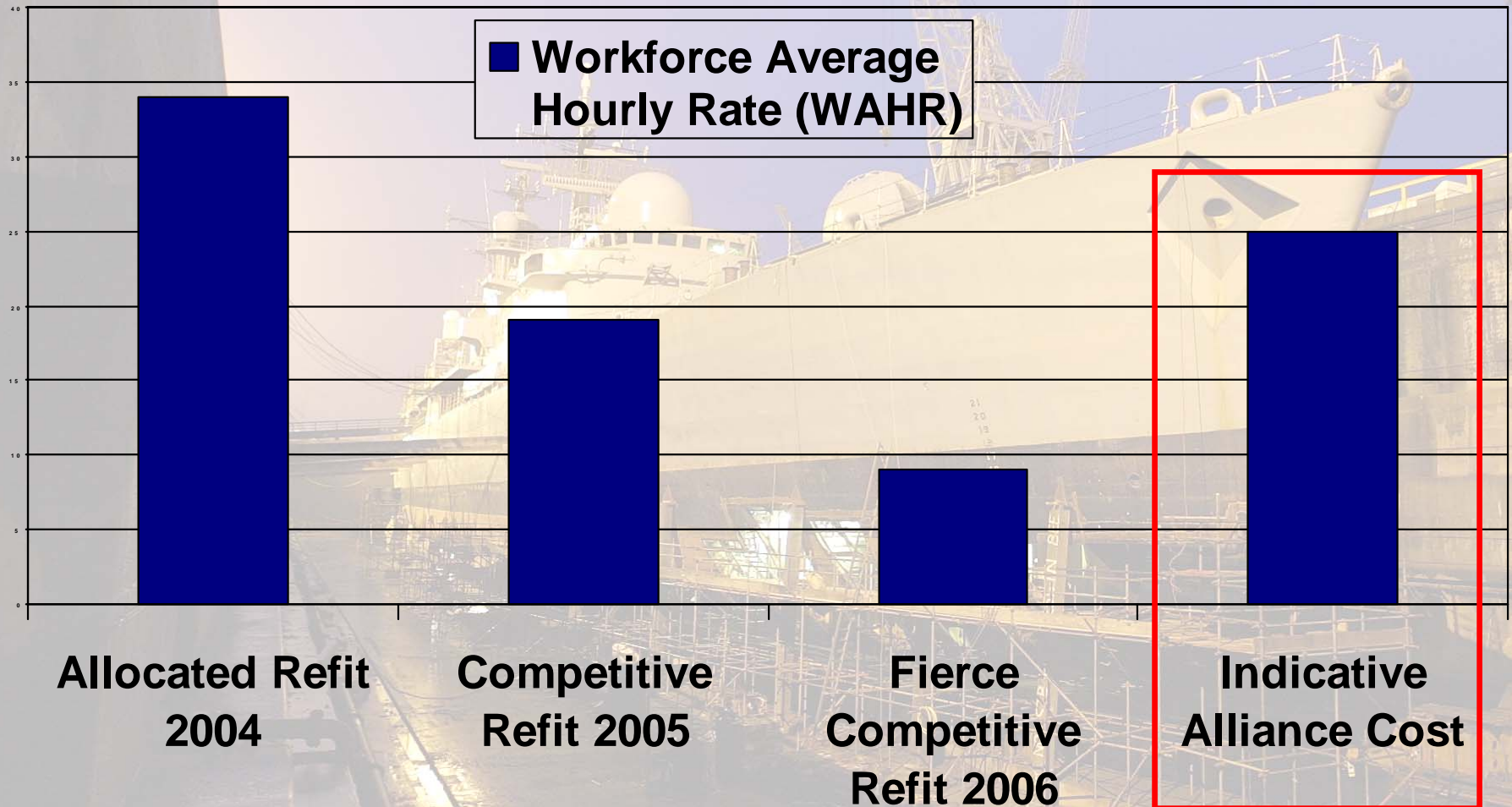
Surface Ship Support Alliance

- Exclusion to 1998 Competition Act
- Joint Industry / MOD Alliance
 - “to deliver sustainable, efficient and affordable support for Royal Naval surface warships”
 - MOD Platform Project teams
 - Babcock Marine (Devonport & Rosyth)
 - BVT Surface Fleet (Portsmouth)
 - Overseen by SSS management board of senior staff from all parties.

SSS

- Initial SSS Activities (“the Liverpool 5”, 2006)
 - Alliancing Agreements
 - Gainshare based contracts
 - Openbook accounting, planning
 - Workload sharing by agreement within Alliance
- Long term Plan
 - Ministerial Announcement March 18 2009.
 - Default method for in service ship support
 - Transfer of some MOD internal class management to Dockyards
 - MOD Ship projects transition to “Decider not Provider”

Refit Manpower Cost Example



Summary

- The challenging defence environment in the UK led to the Defence Industrial Strategy
- This led to significant changes
 - Industrial Reorganisation, Partnering, Alliancing, Long Term Industrial Agreements
 - All linked to MOD's vision on required minimum sustainable capability to undertake warship acquisition in the UK
- Covers entirety of surface ship acquisition cycle
- DIS 2.0 is underway....but impact of Credit Crunch / Recession....

Questions ?

